Atmospheric synchronization corrector for high resolution remote sensing images

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With the development of remote sensing to the earth, more and more high-resolution, multi-spectral optical remote sensing satellites have been launched at home and abroad. This promotes the spatial resolution of remote sensing images and the application of radiation quantification level, and puts forward new requirements for how to obtain high-precision atmospheric parameters and achieve atmospheric correction of remote sensing images [1]. The Anhui Institute of Optics and Mechanics of the Chinese Academy of Sciences has developed an atmospheric synchronization corrector that works with the remote sensing load on the same platform. It acquires the atmospheric information of the angle, spectrum and polarization corresponding to the corrected image through time synchronization and spatial coverage detection. The inversion of high-precision parameters of aerosol and water vapor; the atmospheric parameters obtained by inversion are used as input conditions, and the radiation transmission model is used to perform high-precision atmospheric correction of remote sensing images [2]. The instrument has eight detection bands, covering the short-wave infrared (0.49–2.25 μm) band, of which five bands have polarization detection capability; high-precision integrated structure design ensures the field-of-field coincidence precision of each polarization detection channel and reduces polarization measurement error caused by inconsistent detection target [3]. Laboratory calibration and test results show that the field of view coincidence of the polarization band is better than 99%, the polarization measurement accuracy is better than 1% (for polarization degree = 0.3), and the radiation calibration accuracy is better than 5%, which meets the requirements of instrument design indicators. At present, the instrument is running in orbit for almost one year, and the performance indicators are normal.

This poster will introduce the working principle and performance parameters of the atmospheric synchronization corrector and discuss its application to atmospheric correction of high-resolution remote sensing images.

References

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